# PATENT COOPERATION TREATY

# **PCT**

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference									
10560/PCT	FOR FURTHER ACTION	See Form PCT/IPEA/416							
International application No.	International filing date (day/month/year)	Priority date (day/month/year)							
PCT/EP2004/003377	31.03.2004	16.04.2003							
International Patent Classification (IPC) or national classification and IPC									
Applicant									
UHDE GMBH									
This report is the international preli- under Article 35 and transmitted to the		this International Preliminary Examining Authority							
2. This REPORT consists of a total of	4 sheets, inc	luding this cover sheet.							
3. This report is also accompanied by A	NNEXES, comprising:								
a. Sent to the applicant and	d to the International Bureau) a total of 4	sheets, as follows:							
sheets of the descri	ption, claims and/or drawings which have b	been amended and are the basis for this report and/or							
sheets containing re Instructions).	ectifications authorized by this Authority (se	ee Rule 70.16 and Section 607 of the Administrative							
		y considers contain an amendment that goes beyond							
the disclosure in the Box.	e international application as filed, as indi-	cated in item 4 of Box No. I and the Supplemental							
b. (sent to the International									
	- 2 2								
related thereto, in compute	r readable form only as indicated in the S	, containing a sequence listing and/or tables upplemental Box Relating to Sequence Listing (see							
Section 802 of the Adminis		appreniental Box Relating to dequence Esting (eet							
4. This report contains indications relat	ting to the following items:								
Box No. I Basis of th	e report								
Box No. II Priority									
Box No. III Non-estab	lishment of opinion with regard to novelty, i	inventive step and industrial applicability							
1 🗔	nity of invention	•							
=	•	novelty, inventive step or industrial applicability;							
	nd explanations supporting such statement	11 3,							
Box No. VI Certain do	Box No. VI Certain documents cited								
Box No. VII Certain de	Box No. VII Certain defects in the international application								
Box No. VIII Certain ob	Box No. VIII Certain observations on the international application								
Date of submission of the demand	Date of completion	n of this report							
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Name and mailing address of the IPEA/EP	Authorized officer								
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Facsimile No.	Telephone No.	· · · · · · · · · · · · · · · · · · ·							

Translation

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/003377

Box	No. I		Basis of the report		
1.			to the language, this report is based on the internationader this item.	l application in the language in v	which it was filed, unless otherwise
			eport is based on translations from the original language is the language of a translation furnished for the purpos		,
			international search (Rule 12.3 and 23.1(b))	_	
	;	╚	publication of the international application (Rule 12.4)		
			international preliminary examination (Rule 55.2 and/or	r 55.3)	
2.	With regard to the elements of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):  the international application as originally filed/furnished				
		tne de	scription:		
		pages			as originally filed/furnished
		pages	*	received by this Authority on	
	<del></del>	pages	<u> </u>	received by this Authority on	
	$\boxtimes$	the cla	aims:		
		nos.			as originally filed/furnished
		nos.*		as amended (together	r with any statement) under Article 19 04.11.2004 with letter
		nos.*	1-22	received by this Authority on	
		nos.*		received by this Authority on	
	$\boxtimes$	the dr	awings:		
		sheets	1/8-8/8		as originally filed/furnished
		sheets	s*	received by this Authority on	-
		sheets	s*	received by this Authority on	
		a segi	uence listing and/or any related table(s) – see Suppleme	ntal Box Relating to Sequence I.	
3.	$\Box$	_	imendments have resulted in the cancellation of:	2011 1.01	g
3.	لـــا				
		$\exists$	the description, pages		
		$\exists$	the claims, nos.		<del>-</del>
		H			
			the sequence listing (specify):		
	_	<u></u>	any table(s) related to sequence listing (specify):		
4.	Ш		report has been established as if (some of) the amendr have been considered to go beyond the disclosure as file	ed, as indicated in the Supplemen	ntal Box (Rule 70.2(c)).
		$\mathbb{H}$	the description, pages		
			the claims, nos.		
			the drawings, sheets/figs		
			the sequence listing (specify):		
		Ш	any table(s) related to sequence listing (specify):		
L.	If ite	ет 4 ар	oplies, some or all of those sheets may be marked "supe	erseded."	

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/003377

Box No. V Reasoned statement under a citations and explanations s		nt under Ar inations sup	Article 35(2) with regard to novelty, inventive step or industrial applicability; upporting such statement	
1.	Statement	<u></u>		
	Novelty (N)	Claims	1-22	YES
		Claims		NO
	Inventive step (IS)	Claims		YES
		Claims	1-22	NO
	Industrial applicability (IA)	Claims	1-22	YES
		Claims		NO

- 2. Citations and explanations (Rule 70.7)
  - The application fails to meet the requirement of PCT Article 33(3) for the following reasons:
  - 1.1 WO 98/37457 (document D1), which is considered to be the closest prior art, discloses a microreactor comprising reactor chambers and heat conveyance chambers, with spacer elements in all the chambers and catalyst material applied to the inside walls of the reactor chambers (see D1: International Search Report, in particular figure 5). The channels in the microreactor in figure 5 are 60 microns deep and 430 microns wide. The hydraulic diameter is therefore 105 microns, and the width-height ratio is 7.2.
  - 1.2 The subject matter of claim 1 differs from that of D1 in that the width-height ratio between adjacent spacer elements is between 10 and 800.
  - 1.3 The technical problem to be solved with regard to D1 is that of designing a microreactor that has greater resistance to high pressures and temperatures (including explosive process conditions) than the microreactor of D1 (see page 4, paragraph 10 in the

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

present application). The applicant states that the invention according to claim 1 solves the technical problem of interest "in a surprising way" (page 4, line 35 to page 5, line 4), yet it is not clear from the application that the claimed reactor works better than the reactor disclosed in D1 (a width-height ratio of 7.2 is fairly close to 10). There are no comparative examples to clearly demonstrate the surprising effect, and it is therefore not apparent from the description whether the technical problem of interest has in fact been solved in relation to D1. The subject matter of claim 1 therefore does not involve an inventive step.

1.4 Claims 2 to 14 and the corresponding process claims (claims 15 to 22) do not contain any features that meet the PCT requirements in respect of inventive step, since the features of these claims either are known from D1 or represent routine measures.